

WHAT IS CLAIMED IS:

1. An image formation device for forming an image by transferring an image formed on an image supporting member by an image formation unit, comprising:

5 first and second transfer units which transfers an image formed on the same image supporting member to a recording medium; and

an inverting unit which inverts the front and back sides of said recording medium by an inverting path while conveying
10 said recording medium from the first transfer unit to the second transfer unit.

2. The image formation device according to claim 1, wherein the image formation unit is of the electrophotography method,
15 comprising a latent image formation unit which forms an electrostatic latent image, and a developing unit which develops the formed electrostatic latent image with a toner as a developing sectionicle.

20 3. The image formation device according to claim 2, wherein the image formation unit includes an intermediate transfer unit which transfers the visualized image developed by the developing unit onto an intermediate transfer member.

4. The image formation device according to claim 2, wherein the developing unit is provided by one or more.

5. The image formation device according to claim 3, wherein
5 the image producing unit in contact with said intermediate transfer member is provided by one or more.

6. The image formation device according to claim 5, wherein
one or more photosensitive members are contacted with the
10 intermediate transfer member for executing said intermediate transfer.

7. The image formation device according to claim 6, wherein
one or more developing unit/units are provided with respect to
15 said photosensitive member for executing the developing operation.

8. The image formation device according to claim 1, wherein
the image formation unit is of any method selected from the group
20 consisting of the ink jet method, the toner jet method, the ion flow method, and the magnetography method.

9. The image formation device according to any of claims 1,
wherein the image formation unit forms a first surface image
25 and a second surface image to be transferred each onto the front

and back sides of said recording medium,

the first transfer unit transfers the first surface image onto a first surface of said recording medium, and

the second transfer unit transfers the second surface image onto a second surface of said recording medium inverted by the
5 inverting unit.

10. The image formation device according to claim 9, wherein the first transfer unit comprises a non-contact transfer unit
10 which transfers only the first surface image onto the first surface of said recording medium without influencing the second surface image.

11. The image formation device according to claim 9, wherein
15 the first transfer unit comprises a separation unit which separates the first surface image after being transferred onto the first surface of said recording medium from the image supporting member while the second surface image passes by said first transfer unit position.

20

12. The image formation device according to claim 9, wherein a maintenance unit which maintains the first surface image transferred onto the first surface of said recording medium by
the first transfer unit on said first surface for preventing
25 disturbance at the time of inverting the recording medium, is

09995607.112901

provided.

13. The image formation device according to claim 12, wherein
the maintenance unit comprises a heating fixation unit which
5 fixes the first surface image of said recording medium.

14. The image formation device according to claim 13, wherein
the maintenance unit comprises an application unit which applies
a bias of the same polarity as the toner charge polarity to a
10 member in contact with the first surface image transferred onto
said recording medium between the first transfer unit
installation position and the second transfer unit installation
position.

15 15. The image formation device according to claim 9, wherein
the second transfer unit comprises a transfer unit which
transfers without contact with the first surface of said
recording medium.

20 16. The image formation device according to claim 9, wherein
a transfer fixation unit which executes fixation simultaneously
with transfer of at least one of the first and second transfer
unit, is provided.

17. The image formation device according to claim 9, wherein first and second fixation unit each for executing fixation immediately after the end of the transfer step of the first and second transfer unit are provided, and

5 the thermal amount provided to a paper by the first fixation unit is set at an amount smaller than the thermal amount provided to said recording medium by the second fixation unit.

18. The image formation device according to claim 17, wherein
10 the thermal amount in the first fixation unit is set in a range without generating the cold offset.

19. The image formation device according to claim 17, wherein
15 the first fixation unit comprises a fixation device including a heating member having a heat generating member, a film in contact with said heating member, and a pressuring member in contact with said heating member with pressure via said film, for heating and fixation by passing a recording medium with an unfixed image formed between said film and said pressuring member.

20

20. The image formation device according to claim 9, wherein
a tip end resist unit which matches a predetermined position
in the conveyance direction of said recording medium to be
conveyed into the second transfer unit, and the image tip end
25 of the second surface image, is provided.

21. The image formation device according to claim 9, wherein
a lateral resist adjusting unit which matches said recording
medium in the direction orthogonal to the conveyance direction
between the first transfer unit and the second transfer unit,
5 is provided.

22. The image formation device according to claim 9, wherein
a conveyance path for passage of said recording medium is set
only in the first transfer unit or the second transfer unit at
10 the time of forming an image only on said first surface or said
second surface.

23. The image formation device according to claim 9, wherein
the interval between the first surface image and the second
15 surface image is set by (the time necessary for inversion of
the recording medium) \times (the moving speed of the image supporting
member) or more.

24. The image formation device according to claim 9, wherein
20 the conveyance speed of the recording medium to be conveyed to
the second transfer unit after the image transfer by the first
transfer unit is set at a speed higher than the linear speed
of the image supporting member in the rotational direction.

25. The image formation device according to claim 9, wherein at least one of the first transfer unit and the second transfer unit is of the transfer belt method.

5 26. The image formation device according to claim 1, wherein the image formation unit is of a wet electrophotography method, comprising a latent image formation unit which forms an electrostatic latent image, and a developing unit which visualizes the formed electrostatic latent image with a liquid
10 developing agent containing a toner as a visualizing particle dispersed in a liquid solvent.

27. The image formation device according to claim 26, wherein said liquid developing agent has a characteristic to be cured
15 by a predetermined physical function.

28. The image formation device according to claim 26, wherein the image formation unit includes an intermediate transfer unit which transfers the visualized image developed by the developing
20 unit onto an intermediate transfer member.

29. The image formation device according to claim 28, wherein the image producing unit in contact with said intermediate transfer member is provided by one or more.

30. The image formation device according to claim 29, wherein one or more photosensitive members are contacted with the intermediate transfer member for executing said intermediate transfer.

5

31. The image formation device according to claim 30, wherein one or more developing unit/units are provided with respect to said photosensitive member for executing the developing operation.

10

32. The image formation device according to any of claims 26, wherein the image formation unit forms a first surface image and a second surface image to be transferred each onto the front and back sides of said recording medium,

15

the first transfer unit transfers the first surface image onto a first surface of said recording medium, and the second transfer unit transfers the second surface image onto a second surface of said recording medium inverted by the inverting unit, with a unit which hardens at the time by a predetermined physical function the first surface image transferred by the first transfer unit onto the first surface of said recording medium, provided.

20

25

33. The image formation device according to claim 32, wherein the first transfer unit comprises a non-contact transfer unit which transfers only the first surface image onto the first surface of said recording medium without influencing the second surface image.

34. The image formation device according to claim 32, wherein the first transfer unit comprises a separation unit which separates the first surface image after being transferred onto the first surface of said recording medium from the image supporting member while the second surface image passes by said first transfer unit position.

35. The image formation device according to claim 32, wherein a maintenance unit which maintains the first surface image transferred onto the first surface of said recording medium by the first transfer unit on said first surface for preventing disturbance at the time of inverting the recording medium, is provided.

36. The image formation device according to claim 35, wherein the maintenance unit comprises a heating fixation unit which fixes the first surface image of said recording medium.

37. The image formation device according to claim 36, wherein the maintenance unit comprises an application unit which applies a bias of the same polarity as the toner charge polarity to a member in contact with the first surface image transferred onto
5 said recording medium between the first transfer unit installation position and the second transfer unit installation position.

38. The image formation device according to claim 32, wherein
10 the second transfer unit comprises a transfer unit which transfers without contact with the first surface of said recording medium.

39. The image formation device according to claim 32, wherein
15 a tip end resist unit which matches a predetermined position in the conveyance direction of said recording medium to be conveyed into the second transfer unit, and the image tip end of the second surface image, is provided.

20 40. The image formation device according to claim 32, wherein a lateral resist adjusting unit which matches said recording medium in the direction orthogonal to the conveyance direction between the first transfer unit and the second transfer unit,
is provided.

41. The image formation device according to claim 32, wherein
a conveyance path for passage of said recording medium is set
only in the first transfer unit or the second transfer unit at
the time of forming an image only on said first surface or said
5 second surface.

42. The image formation device according to claim 32, wherein
the interval between the first surface image and the second
surface image is set by (the time necessary for inversion of
10 the recording medium) \times (the moving speed of the image supporting
member) or more.

43. The image formation device according to claim 32, wherein
the conveyance speed of the recording medium to be conveyed to
15 the second transfer unit after the image transfer by the first
transfer unit is set at a speed higher than the linear speed
of the image supporting member in the rotational direction.

44. The image formation device according to claim 32, wherein
20 at least one of the first transfer unit and the second transfer
unit is of the transfer belt method.

45. ~~The image formation device according to claim 27, wherein~~
the predetermined physical function is an optical function.

46. The image formation device according to claim 26, wherein the solvent of said liquid developing agent is volatile.

47. The image formation device according to claim 26, wherein
5 the solvent of said liquid developing agent is permeable to the recording medium.

48. The image formation device according to claim 26, wherein the developing unit is provided by one or more.

10

49. The image formation device according to claim 32, wherein a substance having a surface energy lower than the surface energy of the liquid developing agent is coated on a member to be contacted with the first surface image transferred onto said recording
15 medium, between the first transfer unit installation position and the second transfer unit installation position.

50. The image formation device according to claim 1, wherein the outer circumference of said image supporting member is set
20 at least by a length of {(the first surface image length) + (the second surface image length) + (inverting time by the inverting unit) × (image supporting member speed)} with the premise that
~~images to be transferred onto the front and back sides of said~~
recording medium are a first image and a second image, the first
25 surface image is transferred onto the first surface of said

recording medium by the first transfer unit, and the second surface image is transferred onto the second surface of said recording medium, respectively.

5 51. The image formation device according to claim 1, wherein said image supporting member comprises a photosensitive member or an intermediate transfer member.

09995607.112901
10 52. The image formation device according to any of claims 1, wherein said image supporting member is formed in a drum-like shape, or a belt-like shape.

15 53. The image formation device according to claim 1, wherein a transfer fixation unit which executes fixation simultaneously with transfer of at least one of the first and second transfer unit, is provided.

20 54. The image formation device according to claim 1, wherein first and second fixation unit each for executing fixation immediately after the end of the transfer step of the first and second transfer unit are provided, and

the thermal amount provided to a paper by the first fixation unit is set at an amount smaller than the thermal amount provided to said recording medium by the second fixation unit.

0995607.112901

55. The image formation device according to claim 54, wherein the thermal amount in the first fixation unit is set in a range without generating the cold offset.

5 56. The image formation device according to claim 54, wherein the first fixation unit comprises a fixation device including a heating member having a heat generating member, a film in contact with said heating member, and a pressuring member in contact with said heating member with pressure via said film, for heating
10 and fixation by passing a recording medium with an unfixed image formed between said film and said pressuring member.

57. The image formation device according to claim 1, wherein a cooling unit which cools said image supporting member, is
15 provided.

58. The image formation device according to claim 1, wherein an interleaf mechanism is further provided.

20 59. An image formation method for forming an image by transferring an image formed on an image supporting member by an image formation unit, comprising:

an image formation step of forming a plurality of images on said image supporting member;

25 a first transfer step of transferring one image on said

image supporting member on a first surface of a recording medium,
an inverting step of inverting the front and back sides
of the recording medium with the image transferred onto said
first surface at the first transfer step; and

5 a second transfer step of transferring another image on
said image supporting member onto a second surface of said
recording medium with the front and back sides inverted at the
inverting step.

10 60. The image formation method according to claim 59, wherein
an further different image can be formed between said one image
and said other image.

15 61. An image formation system comprising an inputting device
for inputting image data, and an image formation device for
forming an image based on the inputted image data,

wherein the image formation device comprises said image
formation device for forming an image by transferring an image
formed on an image supporting member by an image formation unit,
20 comprising, first and second transfer units which transfers an
image formed on the same image supporting member to a recording
medium, and an inverting unit which inverts the front and back
~~sides of said recording medium by an inverting path while~~
conveying said recording medium from the first transfer unit
25 to the second transfer unit, wherein an interleaf mechanism is

further provided, as well as an image information memory unit which accumulates the image data inputted from said inputting device at least for one screen.

- 5 62. An image formation system comprising an inputting device for inputting image data, and an image formation device for forming an image based on the inputted image data,

wherein said inputting device comprises an image reading device for optically reading a manuscript as well as the image
10 formation device comprises said image formation device for forming an image by transferring an image formed on an image supporting member by an image formation unit, comprising, first and second transfer units which transfers an image formed on the same image supporting member to a recording medium, and
15 an inverting unit which inverts the front and back sides of said recording medium by an inverting path while conveying said recording medium from the first transfer unit to the second transfer unit,

with the time for reading both surfaces of the manuscript
20 of said image reading device set at the time for exposing the dual sided images on the image supporting member or less.